

DEPARTMENT OF HEALTH AND HUMAN SERVICES

TO: Director
Division of Special Programs, DHHS

FROM: Director
Division of Facilities & Environmental Engineering

SUBJECT: Indian Health Service, FY 1997 Energy Report

The attached submission is in response to your August 27, 1997 Memorandum, requesting the Indian Health Service (IHS) Fiscal Year (FY) 1996/97 Energy Report. We used the DHHS guidelines to ensure that this submission meets the reporting requirements of the following:

- 1) National Energy Conservation Policy Act (NECPA), as amended by the Energy Policy Act of 1992 (EPAct),
- 2) Executive Order (EO) 12759, Federal Energy Management, and
- 3) EO 12902, Energy Efficiency and Water Conservation in Federal Facilities.

If you have any questions or require further information, please contact Adam Scully, P.E., Staff Engineer and Energy Coordinator, Facilities Program Development at (301) 443-7998.

Gary Hartz, P.E.
Assistant Surgeon General

Attachment

cc: Area Facilities Engineers
DFM Read File
FEB Project File

Prepared by: IHS/OEHE/DFM/FEB/ASCULLY:dj:11/21/97:3-7998:Rm600B
DOC#: C:\ENERGY\97covl.doc

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Indian Health Service

FY 1997 Energy Report

November 17, 1996

**Indian Health Service
FY 1997 Energy Report**

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INTRODUCTION

In 1985 the Indian Health Service (IHS) consumed 1,414,011 MMBtu of energy at a rate of 186,095 Btu/GSF. By 1996 the IHS had reduced its energy rate to 161,318 Btu/GSF and by 1997 the IHS facility engineers working with Engineering Services reduced the IHS energy rate to 160,774 Btu or 13.6 percent since 1985, and 0.3 percent since 1996. It appears that the IHS goal of reducing its energy rate by 20 percent by the year 2000 is still achievable.

The decrease of 13.6 percent can be attributed to better and more efficient designs, expansion of building automation systems, replacement of inefficient lighting, and better operational procedures.

A. ANNUAL ENERGY MANAGEMENT DATA REPORT

I. Energy Consumption and Cost Data

AGENCY:	Indian Health Service	REPORTED YEAR:	Fiscal Year 1997
PREPARED BY:	Adam Scully, P.E.	TITLE:	Sr. Asst. Engineer
PHONE NUMBER:	(301) 443-7998	DATE SUBMITTED:	November 10, 1997

Buildings/Facilities

Energy Type	Reporting Units	Annual Consumption	Annual Cost	Unit Cost (\$)	Total MMBtu
Electricity	KWH	131,588,853	\$ 9,567,526	\$0.073 per kwh	448,981
Fuel Oil	Thous. Gal.	1,445.7	\$ 1,435,842	\$0.99 per gal	200,520
Natural Gas	Thous.Cu.Ft.	362,315	\$ 1,478,219	\$4.08 per 1000 CuFt	373,547
LPG/Propane	Thous. Gal.	1,234,880	\$ 820,201	\$0.66 per gal	117,931
TOTALS	---	---	\$ 13,301,788	---	1,140,979

Gross Square Feet	Btu/Gross Square Feet	\$/Gross Square Feet
7,096,784	160,774	1.87

II. Energy Conservation Program Summary

AGENCY:	Indian Health Service	REPORTED YEAR:	Fiscal Year 1997
PREPARED BY:	Adam Scully, P.E.	TITLE:	Staff Engineer
PHONE NUMBER:	(301) 443-7998	DATE SUBMITTED:	November 10, 1997

DIRECT AGENCY EXPENDITURES

Direct expenditures on facility energy efficiency improvements
 Annual Expenditures (Thous. \$) Current Fiscal Year 404,350
 Annual Expenditures (Thous. \$) Next Fiscal Year 744,840
 Annual savings anticipated from expenditures 3,000 MMBTU 28,800(Thous. \$)

ENERGY SAVINGS PERFORMANCE CONTRACTS

Number of ESP contracts awarded None
 Annual savings anticipated from ESP contracts None

UTILITY INCENTIVES

Incentives received None (Thous. \$)
 Funds spent in order to receive incentives None (Thous. \$)
 Annual savings anticipated from DSM activities None MMBTU

TRAINING

Current year expenditures for energy management training 8.1(Thous. \$)
 Number of personnel trained 25

SUMMARY OF ALTERNATIVE TRANSPORTATION FUEL USAGE

Vehicles (required by EPACT Sec. 308)

Number of dedicated alternative fuel vehicles None
 Fuel consumed in dedicated AFVs 0 (Thous. GEG)
 Number of dual-fuel alternative fuel vehicles None
 Fuel consumed in dual-fuel AFVs 0 (Thous. GEG)

Fuel (required by EPACT Sec. 303)

		Annual Consumption	Annual Cost (Thous. \$)
Biodiesel	Thous. Gal.	<u>None</u>	<u> </u>
Electric	KWH	<u>None</u>	<u> </u>
Ethanol	Thous. GEG	<u>None</u>	<u> </u>
Hydrogen	Thous. GEG	<u>None</u>	<u> </u>
Liquified	Thous. GEG	<u>None</u>	<u> </u>
Petroleum Gas (LPG)			
Methanol	Thous. GEG	<u>None</u>	<u> </u>
Natural Gas (CNG or LNG)	Thous. GEG	<u>None</u>	<u> </u>
Other	Thous. GEG	<u>None</u>	<u> </u>

B. ENERGY CONSUMPTION REDUCTION GOALS

The Indian Health Service (IHS) physical plant consists of 37 hospitals, 61 Health centers, 4 school health centers, 48 smaller health stations, 5 YRTPs, 5 ASAPs, and 2100+ quarters. The reported energy cost for Fiscal Year 1997 was \$13,301,788.

The IHS annual energy consumption goals are consistent with the Energy Policy Act of 1992 and Executive Order 12902. Our goals are to reduce energy consumption 20 percent by year 2000, and 30 percent by year 2005. These reduction goals are based on 1985 energy consumption data.

C. ENERGY SAVINGS PERFORMANCE CONTRACTS

ABERDEEN - The Aberdeen Area has been very active in preparing and getting ready for an ESPC. The Area office is working with engineers from ES Seattle to prepare an ESPC with DOE. The Area expects a delivery order to be issued in 2nd or 3rd quarter of FY 1998.

D. ENERGY EFFICIENCY AND WATER CONSERVATION PROJECT FUNDING

Non-recurring Maintenance and Improvement funds are used to accomplish energy conservation projects. For FY 1998 the IHS Headquarters has recommended the following target levels for Energy Surveys and Energy Projects:

Area Office	Energy Surveys and Projects (minimum level)
Aberdeen	115,000
Anchorage	299,000
Albuquerque	66,000
Bemidji	82,000
Billings	75,000
California	59,000
Navajo	153,000
Nashville	51,000
Oklahoma	121,000
Phoenix	113,000
Portland	77,000
Tucson	23,000
Total:	\$1,234,000

ABERDEEN - The Pine Ridge Service Unit has installed motion sensors in the hospital. Also Pine Ridge has negotiated a reduction in electric rates. Sisseton has a policy that any light bulb going out will be replaced with an energy saving bulb. This is a slow start but it certainly indicates that Facility Managers are now fully aware of benefits from reduction in energy

usage. Presently Rosebud is going through a major retrofit project which includes lining all Air Handlers, replacing old motors with high efficiency motors, installing separate cooling unit which would replace the 200 ton chiller, saving energy. The incinerators throughout the Area are no longer being used which has saved an estimated 10% of fuel consumption. Rapid City Service Unit is undergoing a HVAC retrofit which will have a positive impact on energy reduction.

ALBUQUERQUE - Albuquerque Indian Hospital has been undergoing extensive renovation during the past 2 years, with major energy savings expected from the elimination of the large central boilers and chiller. These were replaced by a thermal ground source heat pump loop system, with constant-temperature water being pumped out of the ground and circulated through the heat pumps.

NASHVILLE - There are a number of projects which have the potential to make significant energy savings at the Cherokee Indian Hospital. These include the replacing a roof and adding insulation, replacing eight roof top air handlers, and upgrading the DDC controls in the VAV boxes.

E. ENERGY AND WATER SURVEYS AND AUDITS

Both NECPA and EO 12902 require Federal agencies to perform energy and water surveys and audits. EO 12902 details the requirement by specifying prioritization surveys and comprehensive facility audits and by mandating all facilities to be audited within ten years.

I. Prioritization Surveys

BEMIDJI - In 1996, Prioritization surveys were conducted in the Service Units that are subject to NECPA and EO 12902.

OKLAHOMA - The percentage of building stock included in the surveys was approximately 75%.

PORTLAND - In 1995 preliminary energy audit questionnaires were conducted at each service unit in the Area. All IHS owned facilities were included in the survey. The survey collected data reflective of the overall facility information and major energy using systems/equipment. This information was assessed to produce a prioritization schedule through FY 2001.

TUCSON - The Tucson Area makes their energy surveys part of their yearly annual inspection. And incorporates energy surveys as part of the 5 year deep look. Energy management surveys were conducted in the Tucson Area in 1982. Since that time, Deep Look surveys were conducted in 1986 and 1993, and a portion of each Deep Look survey involved energy management. In addition, an Energy Study was conducted for the Sells Hospital in 1991. The major findings of the 1991 Sells study recommended replacement of some equipment, reviewing equipment sizing to optimize efficiency, reviewing design parameters on outside air quantities to reduce HVAC energy requirements, and making some operational changes to reduce energy use. Prioritization surveys are complete. Two major mechanical renovation projects at Sells and San Xavier necessitate a comprehensive survey.

II. Comprehensive Facility Audit

ABERDEEN - The Area office secured the services of South Dakota State University at Brookings to perform comprehensive audits at 8 facilities. The recommendations from these

audits will be used to prepare an ESPC Package.

ALBUQUERQUE - Comprehensive Facility Audits were completed for 4 out of the 5 major facilities in the Albuquerque Area. The Following is a summary of the recommendations from these audits:

Acoma-Canoncito-Laguna Hospital, Jan 1997. Retrofit fluorescent and incandescent lighting; install an Energy Management System for Central Plant and for AHUs; connect steam sterilizers to existing boiler; replace existing chillers with high-efficiency screw chillers; replace solar, domestic hot water, and condenser water shell and tube heat exchangers with flat plate; convert AHU to VAV; install premium efficiency motors; reduce water flow.

Mescalero Hospital, March 1997. Retrofit lighting; install energy management system; replace existing boilers; replace shell and tube heat exchangers with flat plate heat exchangers; convert AHUs to VAV; install premium efficiency motors; reduce water flow.

Sante Fe Indian Hospital, Jan 1997. Retrofit lighting; install energy management system; remove steam sterilizer and install new high-efficiency boiler; replace heat pump chiller with screw chiller; replace shell and tube heat exchanger with flat plate; convert AHUs to VAV; install premium efficiency motors; install new cooling tower fan VSD; install 2-way control valves; reduce water flow.

Zuni Hospital, Feb. 1997. Retrofit lighting; install energy management system for central plant and AHUs; remove steam sterilizers/connect to new small boiler; replace 2 existing boilers with 3 new boilers; replace shell and tube heat exchangers with flat plate heat exchangers; install control valves on AHUs steam coils; convert AHUs to VAV; install high-efficiency motors; reduce water flow.

BEMIDJI - Comprehensive facility audits have been completed for Red Lake, Leech Lake, and Cass Lake. Cass Lake will need another comprehensive facility audit because it has undergone substantial renovations. A comprehensive facility audit will be conducted at the new White Earth Health Clinic after one year of operation. The facility should open in the spring of 1998. The Following is a summary of the recommendations from these audits:

Leech Lake Service Unit: Replace lamps and ballast, insulation, replace windows, attic insulation, natural gas conversion for boiler/kitchen, efficient motors, energy management system.

Red Lake Service Unit: Weatherstripping, electric to gas kitchen, replace lamps and ballast, efficient motors, energy management system

OKLAHOMA - A comprehensive facility audit is planned at the Claremore Indian Hospital in FY98 upon completion of the installation of variable speed drive HVAC components & the lighting renovation project. The audits listed below are not considered comprehensive but many project were implemented and energy savings were realized at a relatively low cost of surveying these buildings. Audits have been performed in the following facilities:

Claremore Indian Hospital - 1979 - OES

Carl Albert Indian Hospital - 1985 - FKW, Inc. Architects & Engineers

Clinton Indian Hospital - 1985 - FKW, Inc. Architects & Engineers

Pawnee Indian Health Center - 1985 - FKW, Inc. Architects & Engineers

Talihina Indian Hospital - 1985 - FKW, Inc. Architects & Engineers

Audits with limited scopes were performed in the following facilities:

W.W. Hastings Indian Hospital, Tahlequah, - 1995 - OK Energy Analysis & Diagnostic Center

Lawton Indian Hospital - 1995 - OK Energy Analysis & Diagnostic Center

Pawnee Indian Health Center - May of 1996 - Oklahoma Industrial Assessment Center

Anadarko Indian Health Center - May of 1996 - Oklahoma Industrial Assessment Center

TUCSON - Guidelines and scopes for conducting comprehensive audits will be written and will be conducted by Architect/Engineer contractors.

PORTLAND - comprehensive energy audits for the next five years are as follows:

Scheduled Year of Audit	Service Unit	Year of Previous Audit	Number of Years Between Audits
1996 ENERGY AUDIT CHRONOLOGY	Colville -Completed	1986	10
	Neah Bay - Completed	never	N/A
1997	Warm Springs - In Progress	1992 (new bldg) 1986 (old)	5 9
	Northern Idaho - Completed	1986	9
1998	Northwest Washington	1992	6
	Taholah	1992	6
1999	Fort Hall	1994	5
	Wellpinit	1986	13
2000	Western Oregon	1992	8
	Yakama	1994	6
2001	Puyallup	1992	9
	YTC, Spokane	1995	6

Plans for implementing justifiable Energy Conservation Measures identified in comprehensive energy audits will be prepared within 180 days (resources permitting) of receipt of energy audit reports. Summary of energy audits in the Portland Area is as follows:

Number of Locations:	12
Energy Audits within last 3 years:	5
Percentage of all facilities with Energy Audits:	100%
Number of New Facilities designed to Energy Standards (within the last 3 years):	1
Total Percentage of Facilities with recent audits (last 5 years) and/or new facilities designed to standards:	75%

The following is a description of energy conservation opportunities that have been developed as a result of the Comprehensive Facility Audits

Install	Proj. No	FY	Description	Initial Cost (est)	Pay-back (yrs)
Colville Service Unit 11551	Yes PO6CLO 08C6	1997	Audit accomplished in-house at Engineering Services. Final report submitted. COMPLETED.	N/A	N/A

Install	Proj. No	FY	Description	Initial Cost (est)	Pay-back (yrs)
			Recommendation to install floor insulation. PENDING.	\$4,500	<2
			Recommendation to adjust HVAC. Air balance report is pending previous project PO0CL455C6. PENDING.	\$200	<1
Fort Hall Service Unit 11491	No	1990	New facility designed to contemporaneous energy standards. COMPLETED	N/A	N/A
	Yes L.A. Olson	1994	Analysis of Energy Usage (to confirm 1990 design). COMPLETED.	N/A	N/A
Neah Bay Service Unit 30067	Yes PO6NB 008C6	1996	Recommendation to reset thermostat settings during unoccupied periods. COMPLETED FY 1997	\$10	0.03
			Recommendation to replace existing window seals. Note: All windows replaced in FY 1997. COMPLETED FY 1997	\$500	4
			Recommendation to replace interior light fixtures with new lamps and ballasts. - Implementation plan in place at the Service Unit. PENDING.	\$7,673	6
			Recommendation to install timer for domestic hot water circulation pump. Implementation nearly complete. PENDING.	\$300	9
No. Idaho Service Unit 20944	Yes	1997	DOE/FEMP no cost audit. COMPLETED FY 1997.	N/A	N/A
			Recommendation to retrofit lamps and ballasts for main level of clinic. Action PENDING.	\$2,905	4.8
			Recommendation to remove fixtures in basement office. Action PENDING.	\$150	3.3
			Recommendation to install domestic hot water recirculating pump timer. Action PENDING.	\$150	1.3
NW Wash. Service Unit 37567	Yes Kerner/F isher	1992	Comprehensive Audit. COMPLETED.	N/A	N/A
	No PD9NW 002C6	10/94	Install energy management time clock. COMPLETED	\$2,049	0.2 Years
			Install floor insulation. COMPLETED	\$21,789	4.5 Years
			Install occupancy sensors. COMPLETED	\$89	3.7 Years
			Construct main entrance vestibule. COMPLETED	\$9,785	12.8 Years
Puyallup Service Unit 35776	No	1992	New facility designed to contemporaneous energy standards. COMPLETED.	N/A	N/A

Install	Proj. No	FY	Description	Initial Cost (est)	Pay-back (yrs)
Taholah Service Unit 20611	Yes Kerner/Fisher	1992	Comprehensive Audit. COMPLETED.	N/A	N/A
	PD2TA0 04C6	1992	Install energy management system. COMPLETED	\$2,049	0.5 Years
		1992	Install floor insulation. COMPLETED	\$8,604	1.6 Years
		1992	Install new ventilation system. COMPLETED	\$15,843	12.5 Years
Warm Springs Service Unit 11542	Yes Anderson	1986	Audit (Old Health Center). COMPLETED	N/A	N/A
	PO7WA 002C6	1997	Audit of Quarters. (Cost included in cost of Tribal Health and Wellness Center) PENDING	N/A	N/A
Wellpinit Service Unit 11553	Yes Anderson	1986	Audit. COMPLETED.	N/A	N/A
W. Oregon Service Unit 11540	Yes Kerner/Fisher	1992	Install automatic control system for HVAC in FY 1997 in project PO6WN008C6. COMPLETED	N/A	N/A
Yakama Service Unit 19712 Youth Treatment Center / ITC 41217	Yes Anderson	1987	Energy analysis of new construction. COMPLETED	N/A	N/A
	Yes L.A. Olson	1994	Analysis of energy usage in the old facility. COMPLETED	N/A	N/A
	Yes	1995	New facility designed to current energy standards. COMPLETED.	N/A	N/A

F. IMPLEMENTATION OF ENERGY EFFICIENCY AND WATER

ALBUQUERQUE - At the Albuquerque Indian Hospital the boilers were taken off-line in late spring and a portion of the hospital is now being served by the ground-source thermal water closed loop system, with both individual and roof-top heat pumps for heating and cooling. This system now serves the north wing of the 2nd, 3rd, and 4th floors and the entire Outpatient Department. The east and west wings are still served by a rented temporary boiler and chiller, until the completion of Phases 4 and 5. There has been a substantial reduction in energy usage since these new systems went into operation. In fact, the utility company called to see if everything was all right, since their meters were reading so much lower.

BILLINGS - Energy efficient lighting systems, building insulation materials, and HVAC energy management control systems have all been designed into various projects this year.

OKLAHOMA - Projects initiated as a result of previous audits are as follows :
Expand Implementation of Night Setback - Payback (2.5 years)

Insulate Steam Lines and Fittings - Payback (2 years)
 Replace Stairwell Lighting - Payback (1 year)
 Reduce Boiler Combustion air - Payback (1 year)
 Retrofit Exit signs - Payback (1 year)
 Replace Outside Lighting - Payback (3 years)
 Install Occupancy Sensors - Payback (4 years)
 Replace Pharmacy Lighting - Payback (3 years)
 Delamp Hallway Fixtures - Payback (1 year)
 Install Fluorescent T-8 lamps with Electronic Ballasts - Payback (6 years)
 Eliminate the Arrears Charges - Payback (0 years)
 Combine Electric & Gas Meters - Payback (3.1 years)
 Insulate Condensate Return Tank - Payback (3.6 years)
 Remove 8.5% Sales Tax form the Utility Demand Charges - Payback (0 years)
 Replace Mercury Vapor Lamps with Compact Fluorescent Lamps - Payback (7.5 years)
 Demand Shed by Using the Emergency Generator for On-Peak Power - Payback (0 years)

The Area will verify with Area Finance in FY98 that the sales tax has been removed from the demand portion of electricity bills at all of our federal facilities.

Efforts are also underway with Area Finance to eliminate the significant arrears charges on the utility bills.

PORTLAND -

Colville - PD0CO426C6 - Phase III of this project (pending closeout) replaced two out-dated electric (pre 1968) boilers with efficient boilers and installed new energy efficient lighting and windows. A new suspended ceiling was installed which will reduce the volume of conditioned space. This facility was audited in FY 1997 for energy conservation measures. Implementation of ECMs are pending.

Neah Bay - PO6NB008C6 - The building's heat pumps and windows were replaced. Design for a new, efficient roof has been funded and FY 1998 construction is anticipated.

Fort Hall - Engineering Services, Seattle completed a Deep Look for the federally owned facilities. No viable energy conservation measures were discovered.

Yakama - Evaluation of the buildings HVAC is pending an in-house assessment. The assessment will determine the adequacy of the existing HVAC equipment regarding heating/cooling loads.

Indian Tribal Consortium - The ITC Youth Residential Treatment Center, Spokane, was constructed to adhere to the most recent energy efficiency and water reduction guidelines. This facility came online in mid-FY 1996.

Northern Idaho - PO4NI006C6 - This project provided new energy efficient HVAC systems (including heat pumps, ductwork, air handlers and controls) for the main level zone and basement level zone of the Lapwai Indian Health Center in Lapwai, Idaho. In addition, new energy efficient lighting was installed in the basement. This project was closed out in FY 1997. An energy audit was completed in FY 1997. ECMs are pending implementation. - PO7NI006C6 - Energy audit performed by DOE/FEMP was completed. ECM implementation plan is pending.

Northwest Washington (Lummi) - PO7NW002C6 - This project was funded FY 1997 for design and construction to upgrade the clinic's HVAC. New heat pumps and ductwork are to be provided.

Warm Springs - PO7WA002C6- Warm Springs, Oregon. Energy audit report for the Quarters Units is near completion.

Wellpinit - PO4WE006C6 -This project provided new energy efficient HVACsystems(including heat pumps, ductwork, air handlers and controls) for the main level zone and basement level zone of the David C. Wynecoop Memorial Health Center

in Wellpinit, Washington. New energy efficient lighting was installed in the basement.

Western Oregon - PO6WN008C6, Salem, Oregon - Construction for this project was accomplished in FY 1997 to provide an upgraded HVAC system. A four pipe hydronic system was reimplemented with the heat loop energized by new, efficient natural gas boilers. The chilled water loop is cooled by a new, efficient reciprocating chiller. Most of the building's fan coils were either replaced or refurbished. The pneumatic controls were retrofitted for automatic energy conservation modes of operation. High pressure sodium lamps replaced mercury vapor lamps for the building's exterior lighting.

Fort Hall A/SAP, Fort Hall, Idaho - A repair project was completed to replace HVAC units and upgrade perimeter insulation.

Nanitch-Sahallie A/SAP, Salem, Oregon - A project was funded to replace obsolete and inefficient HVAC units including a lighting upgrade to current standards.

Puyallup A/SAP, Tacoma, Washington - A project was completed installing high energy efficiency boilers and associated control systems.

Warm Springs Health and Wellness Center - PO7WA002C6- Warm Springs, Oregon
Energy audit report is near completion.

Yakama A/SAP, Toppenish, Washington - A project was completed replacing HVAC units and adding proper roof insulation.

G. SOLAR AND OTHER RENEWABLE ENERGY

ALBUQUERQUE - Both the Santa Fe and the A-C-L Hospitals make extensive use of solar technologies and current efforts are being made to improve their efficiency of operation. A-C-L is designing a thermal protection system to prevent a dangerous potential to over-heat. These solar radiators are included in the FY98 Equipment Replacement project. M&I funds will be used to implement this project, which is expected to cost about \$30,000. Solar lighting is being planned for FY98 at the A-C-L Quarters, using Quarters Return funds of about \$70,000.

OKLAHOMA - To implement new technology and improve the condition of existing active solar panels (such as those used to heat domestic water in Tahlequah), the Area plans to participate in the interactive video teleconference titled "Buildings for the 21st Century : The President's Million Solar Roofs Initiative". Low e glass will be considered for a project to replace skylights at the Anadarko Indian Health Center in 1998.

H. MINIMIZATION OF PETROLEUM-BASED FUEL USE

Projects to minimize petroleum-based fuel use have not been implemented in IHS, other than energy conservation projects which result in less fuel use. Such projects will be considered in energy audits for each facility.

I. ENERGY EFFICIENT OPERATIONS AND MAINTENANCE PROCEDURES

ABERDEEN - The Area prepared a list of 300 low cost or no cost energy saving opportunities and distributed to all Facility Managers (FM). This list was presented to FM at the Facility Managers Workshops. Some of the ideas were implemented and resulted in energy savings as reported in the first part of this report. Application of these Energy Saving opportunities and Energy Efficient operations have become a part of every maintenance

department at Aberdeen Area Health Care Facilities.

OKLAHOMA -

The steam pressure of two 400 boiler horsepower high-pressure steam boilers at the Claremore Indian Hospital can be lowered from 80 psig to 35 psig and still provide the steam pressure required for sterilizers, and for air handling unit steam pre-heat coils. This should save a significant amount of natural gas in FY98.

A recent major HVAC project at Claremore involved installation of variable speed drives and variable air volume terminal boxes and a Landis & Gyr System 600 control system. Aspects of this project that are currently being optimized to conserve energy include :

- The input/output programming features of the supply & return fan drives.
- Application numbers and sequence of operations for various VAV configurations.
- The electronic outputs of VAV terminal box controllers.

An old original inefficient 30 horsepower motor with a pneumatically controlled inlet guide vane system was replaced with a new 30 horsepower high efficiency motor and an Asea Brown Boveri variable frequency drive at the W.W. Hastings Indian Hospital in Tahlequah. This design was done by Area Office & Service Unit staff without the assistance of Engineering Services-Dallas or a contract AE design.

The proper settings (time, day & temperature) of programmable thermostats in health center at Miami, White Eagle, & Wewoka will be verified in FY98 to ensure that the Area is not conditioning space during unoccupied times.

Tiger Natural Gas completed an analysis of our FY97 natural gas consumption in an attempt to acquire a contract to supply the Area with non-tariff natural gas on the spot market. The Claremore Indian Hospital was the only one that qualified for transportation of gas via this method because they met the minimum annual consumption requirement of 20,000 MMBTU's. This minimum annual consumption requirement applies to Oklahoma Natural Gas, Arkla-NorAM Energy & the Tahlequah Public Works Authority. This minimum amount is expected to be lowered by the regulatory authority in the first quarter of CY98. Tiger Natural Gas projects that they could save us \$16,500 annually (a 15% savings) if the Area procures natural gas through them for Claremore instead of through our current local distribution company. The Area is considering pursuing this opportunity.

The Area is considering hiring a utility analyst to take advantage of "end-user wheeling of electricity" which will happen in the very near future.

TUCSON - Thermostats and controls are being replaced with automatic time-setback models to conserve energy where feasible; the use of motion detectors in some rooms (such as conference rooms) has been investigated and partially implemented. Water-saving valves are replacing less efficient ones as the older ones wear out. As equipment is replaced, more energy efficient replacements are specified. The use of outdoor air is used for free cooling when the air temperature allows and when the ventilation requirements for healthcare spaces are not violated. As lighting is replaced, more efficient lamps and ballasts are specified.

J. ENERGY EFFICIENCY IN NEW SPACE

The Code of Federal Regulations (CFR)436 and CFR 435 (or state codes, whichever are more stringent), are used to ensure that designs of new buildings incorporate life-cycle cost methodologies. This applies to renovation of existing spaces.

K. PERFORMANCE EVALUATIONS

Position descriptions and performance evaluations of facility managers, designers, energy managers, their superiors, and others critical to the implementation of EO 12902 should address energy efficiency, water conservation, and solar and other renewable energy projects.

ABERDEEN - the Area Facilities Engineer and Staff Engineer have energy management in their annual performance evaluation.

L. INCENTIVE AWARDS

PORTLAND –

Lloyd Rabanal, Assistant Facility Manager, Yakama Indian Health Center, in Toppenish, Washington received an HHS Energy Award. Mr. Rabanal's efforts to minimize energy use at the 50,000 square foot (4,645 GSM) Health Care Facility include fine tuning the Landis & Gyr Building Automation system making improvements to the HVAC system.

The Health Center came on-line in 1991 and is automated with the Landis & Gyr Building Automation System. Mr. Rabanal has been very successful making corrections and fine tuning the system. All seven air handlers have been reprogrammed to minimize outside air intake but at the same time provide adequate ventilation to meet ASHRAE 62 standards. The variable frequency drives on the air handlers have been adjusted and tuned. The building automation system correctly adjusts the variable frequency drives based on the duct pressures. Mr. Rabanal has established a maintenance and inspection program to ensure that all sensor, modulating dampers, and modulation valves are functioning properly and are operational. All of the variable volume boxes are in very good working order because Lloyd has programmed high and low limit setpoints to alarm him of any problems. Mr. Rabanal has a thorough understanding of variable volume system and is fully aware of the systems ability to reduce energy when functioning properly. Mr. Rabanal also employs night- and weekend-setback where feasible.

Mr. Rabanal has many other responsibilities that comes from being a facility manager but he is recognized for his contribution in reducing energy.

M. PROCUREMENT OF ENERGY EFFICIENT PRODUCTS

Procurement of energy efficient products is a normal part of business. All personnel recommending and specifying products for procurement consider energy efficiency and cost savings in product selection.

BILLINGS - New energy efficient products are reviewed by the Facilities Management Branch engineers using the "SweetSource" product information catalog. These computerized CD catalogs are updated and provided on a quarterly basis by the contracted vendor.

OKLAHOMA - Activities to institute mechanisms and inform facility managers to purchase energy efficient products when they are cost effective have been initiated. The brochure from the Federal Procurement Challenge discussing how to buy energy efficient products has been forwarded to all Oklahoma City IHS facility managers. Quick references to products that comply with EO 12902 and simple guidelines for estimating cost-effectiveness has been distributed to our facility managers. The "Energy Efficiency Awareness Tool Kit II" was

obtained from FEMP and the posters will be copied and distributed for display in our health facilities.

PORTLAND - 1) The Portland Area Indian Health Service Guideline, establishes model operations and maintenance purchasing procedures for increased energy efficiency within the service units. 2) The Portland Area via Engineering Services was able to procure the Department of Energy (DOE) for an energy audit at Northern Idaho. The DOE provides cost-free energy audits in exchange for the implementation of ten (10) year or less ECM payback.

TUCSON - The statements of work written to replace existing equipment and products include statements that all new products must meet appropriate energy efficiency requirements. This includes minor parts - such as lamps for lights - and major energy consumers, such as air conditioners and hot water heaters.

N. ENERGY MANAGEMENT TRAINING

The IHS Energy Coordinator has developed a 4.5 day course for the Area Engineers and facility managers which covers the following topics:

- a. Overview of Codes and Standards
- b. Economics
- c. Energy Audits/Instrumentation
- d. Electrical System Utilization
- e. Mechanical and HVAC systems
- f. Utility & Process Systems Utilization (Processes)
- g. Building Envelope
- h. Cogeneration
- i. Procurement of Fuel
- j. Energy Management Systems
- k. Control Strategies
- l. Thermal Energy Storage
- m. Lighting
- n. Boiler & Incineration Plants
- o. Maintenance Program

Sixty engineers, managers, and technicians have attended this course. In the past two years 14 people (engineers and technicians) have taken a four hour exam administered by the Association of Energy Engineers (AEE). Nine passed the exam and are now recognized by AEE as Certified Energy Managers (CEMs).

NAVAJO - Headquarters offered a shorter (1.5 - day) version of the 4.5 day Energy Management Course. This course provides a very practical overview of energy management with fewer calculations and computations than what is offered in the 4.5 day course. The course was attended by the Navajo Service Unit Facility managers and Area staff engineers.

ABERDEEN - Formal training was provided at the Facility Managers Work Shops.

ALBUQUERQUE - The Albuquerque Area conducted a course for the Area Engineers and facility managers, which was conducted at the workshop in Durango and April 1997. Approximately 10 people completed this training

BILLINGS - Facility Managers are annually trained on the Direct Digital Controls (DDC's) of

their specific HVAC system to properly maintain and operate them in an efficient manner.

O. ENVIRONMENTAL BENEFITS OF ENERGY MANAGEMENT ACTIVITIES

Reduced energy usage will result in less demand for fossil fuels and will ensure a cleaner environment. In addition, less efficient chillers are being replaced with chillers that do not use CFCs refrigerant.

PORTLAND - FY 1996 and 1997 HVAC upgrades at Neah Bay Clinic (HCTR), Northern Idaho Lapwai Building #0001 (main HCTR building), Wellpinit Building #0005 (main HCTR bldg) and the Western Oregon Service Unit eliminated CFC gases in air conditioning operations at these facilities.